

WHAT IS CLAIMED IS:

1. An air conditioning apparatus for a vehicle having a passenger compartment, said air conditioning apparatus comprising:

an air conditioning case having at one end thereof an inside-air suction port for sucking inside air and an outside-air suction port for sucking outside air and at the other end at least a first air opening portion for blowing air toward a lower portion of the passenger compartment and a second opening portion for blowing air toward an inner surface of a windshield;

a partition member for partitioning an interior of said air conditioning case into a first air passage extending from said inside-air suction port to said first air opening portion and a second air passage extending from said outside-air suction port to said second air opening portion;

a blower for blowing air in said first air passage and said second air passage from said one end side to the other end side;

a cooling heat exchanger disposed in said first air passage and said second air passage, for cooling air passing through said first air passage and said second air passage;

a heating heat exchanger disposed in said first air passage and said second air passage at a downstream side of said cooling heat exchanger, for heating air passing through said first air passage and said second air passage;

a temperature sensor disposed at a ^{within?} side of at least one of said first air passage and said second air passage, for

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detecting a cooling temperature of said cooling heat exchanger;
B ~~intermitting~~ ^{adjusting} means for ^{adjusting a} ~~intermitting~~ ^{amount} refrigerant flowing
into said cooling heat exchanger;

B ~~intermitting~~ ^{adjusting} control means for comparing a cooling
temperature detected by said temperature sensor and a set

B temperature and for ^{controlling operation of} ~~intermittently operating~~ ^{adjusting} said ~~intermitting~~
means; and

changing means for changing the set temperature
according to a temperature of outside air.

NE 2. An air conditioning apparatus according to claim 1,
wherein,

said temperature sensor is disposed at said first air
passage side, and

said changing means increases the set temperature
according to a decrease in the temperature of outside air.

3. An air conditioning apparatus according to claim 1,
wherein,

said temperature sensor is disposed at said second air
passage side, and

said changing means decreases the set temperature
according to a decrease in the temperature of outside air.

4. An air conditioning apparatus according to claim 1,
further comprising:

signal generating means for generating a signal

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according to the temperature of outside air;

wherein said changing means includes set temperature determining means for receiving the signal of said signal generating means and for changing the set temperature stepwise by two steps or more according to the temperature of outside air.

5. An air conditioning apparatus according to claim 1, wherein,

said air conditioning case has at the other end a third opening portion for blowing air toward an upper portion of the passenger compartment, and

said third opening portion and said second opening portion communicate with a downstream side of said second air passage.

6. An air conditioning apparatus according to claim 1, further comprising:

an inside air/outside air switching box for setting any one of:

an inside air/outside air double laminar mode in which inside air is introduced into said first air passage and outside air is introduced into said second air passage,

an outside air mode in which outside air is introduced into both of said first air passage and said second air passage, and

an inside air mode in which inside air is introduced

into both of said first air passage and said second air passage.

7. An air conditioning apparatus according to claim 1, wherein,

said cooling heat exchanger is an evaporator which constitutes a refrigeration cycle with a compressor for compressing refrigerant, a condenser for condensing the refrigerant from said compressor, and decompressing means for decompressing the refrigerant from the condenser, said evaporator being for evaporating the refrigerant from said decompressing means.

8. An air conditioning apparatus according to claim 1, wherein said temperature sensor is disposed at a downstream side of said cooling heat exchanger.

9. An air conditioning apparatus for a vehicle having a passenger compartment, said air conditioning apparatus comprising:

an air conditioning case having at one end thereof an inside-air suction port for sucking inside air and an outside-air suction port for sucking outside air and at the other end at least a first air opening portion for blowing air toward a lower portion of the passenger compartment and a second opening portion for blowing air toward an inner surface of a windshield;

a partition member for partitioning an interior of said air conditioning case into a first air passage extending from

said inside-air suction port to said first air opening portion and a second air passage extending from said outside-air suction port to said second air opening portion;

a blower for blowing air in said first air passage and said second air passage from said one end side to the other end side;

a cooling heat exchanger disposed in said first air passage and said second air passage, for cooling air passing through said first air passage and said second air passage;

a heating heat exchanger disposed in said first air passage and said second air passage at a downstream side of said cooling heat exchanger, for heating air passing through said first air passage and said second air passage;

a temperature sensor disposed at a side of said first air passage, for detecting a cooling temperature of said cooling heat exchanger;

intermitting means for *Adjusting a* ~~intermitting~~ *amount* refrigerant flowing into said cooling heat exchanger; and

intermitting control means for comparing a cooling temperature detected by said temperature sensor and a set temperature and for intermittently operating said intermitting means.

10. An air conditioning apparatus for a vehicle having a passenger compartment, said air conditioning apparatus comprising:

an air conditioning case having at one end thereof an

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inside-air suction port for sucking inside air and an outside-air suction port for sucking outside air and at the other end at least a first air opening portion for blowing air toward a lower portion of the passenger compartment and a second opening portion for blowing air toward an inner surface of a windshield;

a partition member for partitioning an interior of said air conditioning case into a first air passage extending from said inside-air suction port to said first air opening portion and a second air passage extending from said outside-air suction port to said second air opening portion;

a blower for blowing air in said first air passage and said second air passage from said one end side to the other end side;

a cooling heat exchanger disposed in said first air passage and said second air passage, for cooling air passing through said first air passage and said second air passage;

a heating heat exchanger disposed in said first air passage and said second air passage at a downstream side of said cooling heat exchanger, for heating air passing through said first air passage and said second air passage;

a temperature sensor disposed at a side of said second air passage, for detecting a cooling temperature of said cooling heat exchanger;

a *adjusting* *adjusting a* *amount*
intermitting means for ~~intermitting~~ refrigerant, flowing into said cooling heat exchanger; and

adjustive
intermitting control means for comparing a cooling temperature detected by said temperature sensor and a set

17 temperature and for *controlling operation of adjusting* ~~intermittently operating said intermittent~~ means.

11. An air conditioning apparatus for a vehicle having a passenger compartment, said air conditioning apparatus comprising:

an air conditioning case having therein a first air passage including an inside-air suction port for sucking inside air at one end thereof and a lower air opening portion at the other end thereof, for blowing air toward a lower portion of the passenger compartment, and a second air passage including an outside-air suction port for sucking outside air at one end thereof and an upper opening portion at the other end thereof, for blowing air from a portion which is higher than said lower opening portion;

a blower for blowing air in said first air passage and said second air passage from said one end side to the other end side;

a cooling heat exchanger disposed in said first air passage and said second air passage, for cooling air passing through said first air passage and said second air passage;

a heating heat exchanger disposed in said first air passage and said second air passage at a downstream side of said cooling heat exchanger, for heating air passing through said first air passage and said second air passage;

a temperature sensor disposed at a side of said first air passage, for detecting a cooling temperature of said

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cooling heat exchanger;

first temperature adjusting means for adjusting a temperature of conditioned air which is conditioned by said cooling heat exchanger and said heating heat exchanger in said first air passage;

second temperature adjusting means for adjusting a temperature of conditioned air which is conditioned by said cooling heat exchanger and said heating heat exchanger in said second air passage;

temperature control means for controlling said first and second temperature adjusting means based on the cooling temperature detected by said temperature sensor; and

intermitting means for ^{adjusting a} ~~intermitting~~ refrigerant ^{Amount}₁ supplied into said cooling heat exchanger; wherein,

when a state where the refrigerant is supplied to said cooling heat exchanger is changed to a state where the refrigerant is interrupted by said intermitting means, said temperature control means controls said second temperature adjusting means to increase the temperature of the conditioned air in said second air passage.

12. An air conditioning apparatus according to claim 11, wherein,

said first temperature adjusting means is first air amount adjusting means for adjusting a ratio of an amount of warm air passing through said heating heat exchanger and an amount of cool air bypassing said heating heat exchanger, and

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said second temperature adjusting means is second air amount adjusting means for adjusting a ratio of an amount of warm air passing through said heating heat exchanger and an amount of cool air bypassing said heating heat exchanger.

13. An air conditioning apparatus according to claim 12, further comprising:

an inside air temperature sensor for detecting a temperature in said passenger compartment;

a temperature setting unit for setting a set temperature in said passenger compartment;

target air temperature calculating means for calculating a target temperature of the air to be blown into said passenger compartment, based on the temperature detected by said inside air temperature sensor and the set temperature set by said temperature setting unit;

target air amount ratio calculating means for calculating an identical target air amount ratio for said first and second air amount ratio adjusting means, based on at least the target air temperature and the cooling temperature; and

correcting means for correcting the target air amount ratio to increase the temperature of the conditioned air in said second air passage, which is adjusted by said second air amount ratio adjusting means.

14. An air conditioning apparatus according to claim 11, further comprising:

an inside air temperature sensor for detecting a temperature in said passenger compartment; and

an outside air temperature sensor for detecting a temperature outside said passenger compartment;

wherein said temperature control means controls said second temperature adjusting means to increase the temperature of the conditioned air in said second air passage in accordance with a difference between the temperature in said passenger compartment, detected by said inside air temperature sensor, and the temperature outside said passenger compartment, detected by said outside air temperature sensor.

15. An air conditioning apparatus for a vehicle having a passenger compartment, said air conditioning apparatus comprising:

an air conditioning case having therein a first air passage including an inside-air suction port for sucking inside air at one end thereof and a lower air opening portion at the other end thereof, for blowing air toward a lower portion of the passenger compartment, and a second air passage including an outside-air suction port for sucking outside air at one end thereof and an upper opening portion at the other end thereof, for blowing air from a portion which is higher than said lower opening portion;

a blower for blowing air in said first air passage and said second air passage from said one end side to the other end side;

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a cooling heat exchanger disposed in said first air passage and said second air passage, for cooling air passing through said first air passage and said second air passage;

a heating heat exchanger disposed in said first air passage and said second air passage at a downstream side of said cooling heat exchanger, for heating air passing through said first air passage and said second air passage;

a temperature sensor disposed at a side of said second air passage, for detecting a cooling temperature of said cooling heat exchanger;

first temperature adjusting means for adjusting a temperature of conditioned air which is conditioned by said cooling heat exchanger and said heating heat exchanger in said first air passage;

second temperature adjusting means for adjusting a temperature of conditioned air which is conditioned by said cooling heat exchanger and said heating heat exchanger in said second air passage;

temperature control means for controlling said first and second temperature adjusting means based on the cooling temperature detected by said temperature sensor; and

intermitting means for ^{adjusting a} ~~intermitting~~ ^{amount} refrigerant, supplied into said cooling heat exchanger; wherein,

when a state where the refrigerant is supplied to said cooling heat exchanger is changed to a state where the refrigerant is interrupted by said intermitting means, said temperature control means controls said first temperature

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adjusting means to decrease the temperature of the conditioned air in said first air passage.

16. An air conditioning apparatus according to claim 15, wherein,

said first temperature adjusting means is first air amount adjusting means for adjusting a ratio of an amount of warm air passing through said heating heat exchanger and an amount of cool air bypassing said heating heat exchanger, and

said second temperature adjusting means is second air amount adjusting means for adjusting a ratio of an amount of warm air passing through said heating heat exchanger and an amount of cool air bypassing said heating heat exchanger.

17. An air conditioning apparatus according to claim 15, further comprising:

an inside air temperature sensor for detecting a temperature in said passenger compartment;

a temperature setting unit for setting a set temperature in said passenger compartment;

target air temperature calculating means for calculating a target temperature of the air to be blown into said passenger compartment, based on the temperature detected by said inside air temperature sensor and the set temperature set by said temperature setting unit;

target air amount ratio calculating means for calculating an identical target air amount ratio for said first

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and second air amount ratio adjusting means, based on at least the target air temperature and the cooling temperature; and

correcting means for correcting the target air amount ratio to decrease the temperature of the conditioned air in said first air passage, which is adjusted by said first air amount ratio adjusting means.

18. An air conditioning apparatus according to claim 11, further comprising:

an inside air temperature sensor for detecting a temperature in said passenger compartment; and

an outside air temperature sensor for detecting a temperature outside said passenger compartment;

wherein said temperature control means controls said second temperature adjusting means to decrease the temperature of the conditioned air in said first air passage in accordance with a difference between the temperature in said passenger compartment, detected by said inside air temperature sensor, and the temperature outside said passenger compartment, detected by said outside air temperature sensor.

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